

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW  
AND THE DEPARTMENT OF ENVIRONMENTAL QUALITY  
OF THE STATE OF MONTANA

In the matter of the amendment of ARM )	NOTICE OF AMENDMENT
17.36.345, 17.38.101, 17.38.106, )	
17.38.208, and 17.38.229 pertaining to )	(PUBLIC WATER)
adoption by reference, plans for public )	(SEWAGE SYSTEM
water supply or wastewater system, )	REQUIREMENTS)
fees, treatment requirements, and )	(SUBDIVISIONS)
disinfection )	

TO: All Concerned Persons

1. On October 27, 2005, the Board of Environmental Review and the Department of Environmental Quality published MAR Notice No. 17-234 regarding a notice of public hearing on the proposed amendment of the above-stated rules at page 2002, 2005 Montana Administrative Register, issue number 20.

2. The Department has amended ARM 17.36.345 exactly as proposed, and has adopted Circulars DEQ-1 and DEQ-3 with changes in response to comments as set out in paragraph 3. The Board has amended ARM 17.38.101, 17.38.106, and 17.38.208 exactly as proposed. The Board has adopted Circulars DEQ-1 and DEQ-3 with changes in response to comments as set out in paragraph 3, and has amended ARM 17.38.229 as proposed, but with the following changes, new material underlined, stricken material interlined:

17.38.229 DISINFECTION (1) Full time disinfection with chlorine, chlorine dioxide, chloramines, or a disinfectant that maintains a residual is mandatory where the source of water is from lakes, reservoirs, or streams, or ground water sources under the direct influence of surface water, or where the water may be exposed to a potential source of contamination including, but not limited to:

(a) losses of ~~positive~~ pressure within the system that could result in backflow or infiltration conditions; or

~~(b) unprotected or poorly protected ground water sources; or~~

(c) remains as proposed, but is renumbered (b).

(2) Full time disinfection of the water supply is mandatory whenever the water may be exposed to a potential source of contamination through:

(a) treatment processes, as determined by the department; or

(b) unprotected or poorly protected ground water sources.

(3) Full time disinfection of the water in a ground water supply system is mandatory whenever the record of bacteriological tests of the system does not indicate a safe water under the criteria listed in ARM 17.38.207 and 17.38.215. Full time disinfection with chlorine, chlorine dioxide, chloramines, or a disinfectant that maintains a residual may be required where the history and nature of the contaminant indicate a residual is required to ensure safe water.

(4) remains as proposed.

(5) The residual disinfectant concentration measured as free chlorine, total chlorine, combined chlorine, chlorine dioxide, or other department approved disinfectant(s), in the distribution system of a ground water supply system required by the department to use continuous disinfection with chlorine, chlorine dioxide, chloramines, or a disinfectant that maintains a residual must not be less than 0.2mg/l using the DPD method or 0.1mg/l using the amperometric titration method. A heterotrophic bacteria concentration in water in the distribution system less than or equal to 500 per milliliter, measured as heterotrophic plate count (HPC), is an acceptable substitute for disinfectant residual for purposes of determining compliance with this rule.

3. The following comments were received and appear with the Board's and Department's responses:

COMMENT NO. 1: In ARM 17.38.229(1)(a), clarify when disinfection with chlorine will be required. Every ground, elevated, or pumped storage system has pressure losses in the distribution system.

RESPONSE: The intention is to require disinfection with chlorine when loss of pressure within the distribution system could result in backflow or infiltration conditions that could expose the system to sources of contamination. The rule has been amended as shown above in response to this comment.

COMMENT NO. 2: The proposed rule language in ARM 17.38.229 limits the use of alternative disinfectants other than chlorine.

RESPONSE: The Board recognizes that other disinfectants may be appropriate in certain situations. ARM 17.38.229(1)(b) has been removed and placed in 17.38.229(2) to allow other disinfection methods for ground water systems that are unprotected, poorly protected, or may be exposed to a potential source of contamination.

The language in ARM 17.38.229(1), (3), and (5), that refers to the use of chlorine, has been expanded to include chlorine dioxide, chloramines, or a disinfectant that maintains a residual. The term "chlorine" was intended to include any form of chlorine, such as chlorine dioxide or chloramines. However, the additional language will clarify what type of disinfectant is acceptable.

The requirement for chlorine, chlorine dioxide, chloramines, or a disinfectant that maintains a residual for surface water and ground water under the direct influence of surface water is contained in ARM 17.38.229(1). The Surface Water Treatment Rule (SWTR) as promulgated by the Environmental Protection Agency (EPA) has been adopted by reference in its entirety by the Board. The SWTR requires all regulated systems (surface water and ground water under the direct influence of surface water) to maintain a minimum disinfectant residual at the entry to the distribution system of 0.2 mg/L measured as free chlorine, total chlorine, combined chlorine, or chlorine dioxide, and that the disinfectant residual be detectable within the distribution system. Therefore, the rules must require systems regulated under the SWTR to use a disinfectant that maintains a residual, such as chlorine, chlorine dioxide, or chloramines. However, disinfectants other than chlorine can and have been used by systems to achieve primary inactivation of

pathogens. Please refer to Comment No. 3 and the Response to that comment for information on disinfectants that are allowed for primary inactivation of pathogens.

The language that requires ground water systems to maintain a disinfectant residual where protection of the distribution system is necessary is contained in ARM 17.38.229(3). Other disinfectants such as ozone or UV decay rapidly and cannot provide the residual necessary to protect the distribution system.

COMMENT NO. 3: There are several other disinfection methods, including EPA-approved filtration, ozonation, and UV systems that can remove or destroy microbial species as effectively if not more effectively than chlorine depending on the type of microbe.

RESPONSE: The Board has previously adopted by reference all currently promulgated EPA drinking water rules that apply to systems using either surface water or ground water under the direct influence of surface water as follows:

Surface Water Treatment Rule (SWTR) (40 CFR Sections 141.70 through 141.75)

Interim Enhanced Surface Water Treatment Rule (40 CFR Sections 141.170 through 141.175)

Long Term 1 Enhanced Surface Water Treatment Rule (40 CFR Sections 141.500 through 141.571)

These rules require that a system achieve removal and/or inactivation of Cryptosporidium, Giardia, and viruses through a combination of treatment (consisting of coagulation, flocculation, sedimentation, and filtration) and/or disinfection. The Board and Department recognize that chlorine is ineffective against Cryptosporidium and require surface water systems to install treatment processes (coagulation and filtration) to physically remove Cryptosporidium or implement a watershed control plan and monitoring to comply with the criteria to avoid filtration as stipulated in 40 CFR Section 141.71. The SWTR lists a number of disinfectants (chlorine, chlorine dioxide, and ozone) that can be used to achieve primary inactivation of pathogens and the rules allow the use of these disinfectants.

COMMENT NO. 4: There is substantial research regarding the potential negative health impact of chronic exposure to chlorinated disinfection byproducts.

RESPONSE: The Board and Department recognize that chlorine combines with organic matter to form disinfection byproducts. The Board has adopted by reference the Disinfectants and Disinfection Byproducts Rule (Stage 1) as promulgated by EPA. The rules currently require any system (surface water and ground water) that uses a chemical disinfectant to monitor for all regulated disinfection byproducts, including total trihalomethanes and haloacetic acids. Surface water systems that practice filtration typically achieve substantial organic removal to limit the formation of disinfection byproducts. Therefore, chlorine used for disinfection purposes after filtration has not created any issues with Stage 1 compliance. However, there are some systems that are developing alternative

treatment strategies, including the use of disinfectants other than chlorine, to address high disinfection byproduct concentrations.

COMMENT NO. 5: Circular DEQ-1, Standard 2.18. Will the revised wording, mandating compliance with all other applicable safety codes and regulations, require Department staff to review plans for compliance with other codes and will approval constitute compliance with those codes?

RESPONSE: Department staff will not review plans for compliance with other applicable codes. The revisions require only that the applicable codes be referenced in the specifications or engineering report narrative. Department review and approval is limited to the Department's authority under Title 75 of the Montana Code Annotated.

COMMENT NO. 6: Circular DEQ-1, Standard 6.0. The revised wording may be interpreted by the Department to require that valves, meters, and controls be placed above ground.

RESPONSE: This standard does not apply to valves, meters, or controls, but only to pumping stations as covered in Chapter 6. In addition, the term "should" indicates desirable procedures or methods, not mandatory requirements (see Circular DEQ-1, Forward). The requirements for distribution system appurtenances such as valves and meters are covered in Standard 8.6, which states "Whenever possible, chambers, pits or manholes containing valves, blow-offs, meters or other such appurtenances to the distribution system must not be located in areas subject to flooding or in areas of high ground water." As long as the valve or meter location is not subject to flooding or high ground water, it may be buried underground.

COMMENT NO. 7: Circular DEQ-1, Section 7.0.1. Where small systems are required to provide fire flow, the increase in water storage capacity may result in stagnation and poor water quality. The Department may want to establish a maximum number of days for turnover in a storage tank. Some flexibility should be given to small systems to balance stagnant water issues with fire protection capacity.

RESPONSE: The Board and Department do not concur with this recommendation since the risk of negative pressures under fire flow conditions could result in a serious health hazard. If less storage is appropriate for a specific situation, a deviation can be granted.

COMMENT NO. 8: Circular DEQ-1, Standard 7.0.1 seems to require a minimum of maximum day demand or average day demand. Which is correct?

RESPONSE: The Board and Department concur that the wording of this standard may be confusing and have made changes to the Circular.

COMMENT NO. 9: In Circular DEQ-1, Standard 7.0.8, changing the word "manholes" to "manways" may clarify the meaning.

RESPONSE: The Board and Department concur with this comment and have made changes to the Circular.

COMMENT NO. 10: In Circulars DEQ-1 and DEQ-3, revised wording regarding fire flow determinations needs clarification.

RESPONSE: The Board and Department concur that these Standards may require clarification and has made changes to the Circulars.

COMMENT NO. 11: Circular DEQ-1, Section 8.2.2. If a professional engineer properly designs the system, why do we have to set a minimum on main size? There are scenarios where a 2" main would meet the system requirements.

RESPONSE: The Board and Department concur that setting a minimum size may be unnecessarily restrictive and have changed this Standard from a requirement to a recommendation. There is adequate justification for leaving the recommended 3" size as small pipes have small hydraulic radii and this increases water quality deterioration through contact with the pipe wall, increases friction through interior incrustations and associated decreases in hydraulic capacity, and increases the relative effect of joint leakage. The recommended size also gives some margin of safety for disparate predictions of peak instantaneous demand. The Board and Department have made changes to the Circular.

COMMENT NO. 12: Circular DEQ-1, Standard 8.15. This new Standard requires Department approval of temporary water distribution during construction. Temporary water usually falls under the purview of the project contractor, rather than the design engineer. A delay of 60 days for review of the contractor's plan would have major financial and schedule impacts. It would be ideal for the Department to establish temporary standards so that contractors and engineers know what the standards are and the design engineers can enforce them.

RESPONSE: The Board and Department concur that objective standards that can be included in the contract specifications are appropriate. If these requirements are included in the contract specifications, the project contractor will not be required to submit an additional plan for approval. The Board and Department have made language changes to the Circular.

COMMENT NO. 13: Certified Checklists. Two engineers from the same firm should be able to stamp Main Extension Certified Checklists where the public water system does not have a City Engineer on staff or on retainer.

RESPONSE: The intent of the certified checklist procedure was to allow for a shortened review process when the project was reviewed by an independent engineer acting on behalf of the public water supply rather than a project developer. However, current language allows review by an engineer from the same firm as long as the review engineer is acting on behalf of the PWS rather than the developer, and the PWS submits a letter of concurrence.

COMMENT NO. 14: One additional comment was received on December 24, 2005, one month after the public comment period closed.

RESPONSE: The additional comment was duplicative of Comment No. 4. The Board and Department response to this comment is contained in Response to Comment No. 4.

Reviewed by:

BOARD OF ENVIRONMENTAL REVIEW

/s/ James M. Madden  
JAMES M. MADDEN  
Rule Reviewer

By: /s/ Joseph W. Russell  
JOSEPH W. RUSSELL, M.P.H.  
Chairman

BY: /s/ Richard H. Opper  
RICHARD H. OPPER, Director

Certified to the Secretary of State, February, 2006.